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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,908

10/13/2005

Ulrich Weidmann

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EXAMINER
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MCCULLEY, MEGAN CASSANDRA

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,908	<b>Applicant(s)</b> WEIDMANN, ULRICH	
	<b>Examiner</b> Megan McCulley	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/2/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5,8-11 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,8-11 and 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (U.S. 5,922,448) in view of Blyakhman (U.S. 5,591,811) in further view of Goswami et al. (U.S. Pat. 4,652,398).

Regarding claims 1-5: Das et al. teaches a phenol and an imidazole at a weight ratio of imidazole to phenol of 15:85 to 25:75 to make a curable composition (col. 9 line 40-col. 10 line 7).

Das et al. does not teach adding the compound of general formula (I). However, Blyakhman teaches a compound of general formula (I) of the instant application where R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> are each independently of the other hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms, which could be substituted by alkyl groups of 1 to 4 carbon atoms; cycloalkyl-alkyl of 4 to 20 carbon atoms which can be substituted by alkyl groups of 1 to 4 carbon atoms; aryl of 6 to 10 carbon atoms, which could be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; phenylalkyl of 7 to 15 carbon atoms, which could be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; alkenyl of 3 to 12 carbon atoms; alkynyl of 3 to 12 carbon atoms; aromatic or aliphatic acyl group of 3 to 12 carbon atoms or alkyl or aryl of 3 to 12 carbon atoms containing a cyano group or a halogen; R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are each independently of the

Art Unit: 1796

other hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms, which can be substituted by alkyl groups of 1 to 4 carbon atoms; cycloalkyl-alkyl of 4 to 20 carbon atoms, which can be substituted by alkyl groups of 1 to 4 carbon atoms; aryl of 6 to 10 carbons atoms, which can be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; phenylalkyl of 7 to 15 carbon atoms, which can be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; alkenyl of 3 to 12 carbon atoms; alkynyl of 3 to 12 carbon atoms; halogen; alkoxy of 1 to 12 carbon atoms; or hydroxyl (formula (I) and col. 2 line 59- col. 3 line 16). Das et al. and Blyakhman are analogous art since they are both concerned with the same field of endeavor, namely epoxy resin compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to add in the imidazole of general formula (I) with the composition of Das et al. and would have been motivated to do so because 1-imidazolymethyl-2-naphthols are effective catalysts for curing epoxy resins and provide epoxy resin systems with prolonged room temperature stability and fast curing as stated by Blyakhman (abstract).

Das et al. does not teach the specific phenols of the instant application. However, Goswami et al. teaches an epoxy resin, 2,2'-diallyl bisphenol A (o,o'-diallylbisphenol A) and an imidazole (Example 2). Das et al. and Goswami et al. are analogous art since they are both concerned with the same field of endeavor, namely epoxy resin curable compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the o,o'-diallyl-bisphenol A of Goswami et al. with the composition of Das et al. and would have been motivated to do

Art Unit: 1796

so for such desirable properties as an excellent bond strength as discussed in Goswami et al. (col. 7 lines 14-23).

Claims 8-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (U.S. 5,922,448) in view of Blyakhman (U.S. 5,591,811) in further view of Goswami et al. (U.S. Pat. 4,652,398) and Klein et al. (U.S. 6,245,835).

Regarding claims 8 and 9: Das et al. teaches a phenol and an imidazole at a weight ratio of imidazole to phenol of 15:85 to 25:75 to make a curable composition (col. 9 line 40-col. 10 line 7).

Das et al. does not teach adding the compound of general formula (I). However, Blyakhman teaches a compound of general formula (I) of the instant application where  $R_1$ ,  $R_2$ , and  $R_3$  are each independently of the other hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms, which could be substituted by alkyl groups of 1 to 4 carbon atoms; cycloalkyl-alkyl of 4 to 20 carbon atoms which can be substituted by alkyl groups of 1 to 4 carbon atoms; aryl of 6 to 10 carbon atoms, which could be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; phenylalkyl of 7 to 15 carbon atoms, which could be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; alkenyl of 3 to 12 carbon atoms; alkynyl of 3 to 12 carbon atoms; aromatic or aliphatic acyl group of 3 to 12 carbon atoms or alkyl or aryl of 3 to 12 carbon atoms containing a cyano group or a halogen;  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$  are each independently of the other hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms, which can be substituted by alkyl groups of 1 to 4 carbon atoms; cycloalkyl-alkyl of 4 to 20

Art Unit: 1796

carbon atoms, which can be substituted by alkyl groups of 1 to 4 carbon atoms; aryl of 6 to 10 carbons atoms, which can be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; phenylalkyl of 7 to 15 carbon atoms, which can be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; alkenyl of 3 to 12 carbon atoms; alkynyl of 3 to 12 carbon atoms; halogen; alkoxy of 1 to 12 carbon atoms; or hydroxyl (formula (I) and col. 2 line 59- col. 3 line 16) in the amount of 2-25 parts by weight. Blyakhman further teaches an epoxy resin (abstract) made of a bisphenol A, which has 2 epoxy functional groups per molecule at a molecular weight range of 1000 to 1500 (col. 5 lines 5-10). This corresponds to an epoxide equivalents range of 0.5 to 0.75 epoxide equivalents/kg. Blyakhman also teaches adding a curing agent for the epoxy resin and one or more additives (col. 5 lines 41-53). At the time of the invention a person having ordinary skill in the art would have found it obvious to add in the imidazole of general formula (I) with the composition of Das et al. and would have been motivated to do so because 1-imidazolylmethyl-2-naphthols are effective catalysts for curing epoxy resins and provide epoxy resin systems with prolonged room temperature stability and fast curing as stated by Blyakhman (abstract).

Das et al. does not teach the specific phenols of the instant application. However, Goswami et al. teaches an epoxy resin, 2,2'-dially bisphenol A (o,o'-diallylbisphenol A) and an imidazole (Example 2). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the o,o'-diallylbisphenol A of Goswami et al. with the composition of Das et al. and would have been

Art Unit: 1796

motivated to do so for such desirable properties as an excellent bond strength as discussed in Goswami et al. (col. 7 lines 14-23).

Das et al. also does not teach the polyamine curing agent or the curing agent to have 0.5 to 1.5 functional groups per epoxide group. However, Klein et al. teaches a polyamine curing agent (col. 16 lines 14-49) for an epoxy resin having 0.5 to 2 functional equivalents per epoxy group (col. 11 lines 38-46). Das et al. and Klein et al. are analogous art because they are both concerned with the same field of endeavor, namely cured epoxy resins with an imidazole catalyst. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the functional group ratio of Klein et al. with the composition of Das et al. and would have been motivated to do so because with this ratio of functional groups the composition will not have much excess unreacted epoxy resin or curing agent, which would lead to decreased viscosity.

Regarding claim 10: Klein et al. further teaches a polyoxypropylenediamine curing agent (col. 16 line 38). At the time of the invention a person having ordinary skill in the art would have found it obvious to use a polyoxypropylenediamine as a polyamine curing agent and would have been motivated to do so because polyoxypropylenediamine is more reactive curing agent for epoxy resins.

Regarding claim 11: Das et al. teaches using a bisphenol A based epoxy resin/glycidyl ether (col. 5 lines 30-45).

Regarding claim 15: Das et al. teaches a prepreg comprising a similar composition (col. 10 lines 40-60).

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (U.S. 5,922,448) in view of Blyakhman (U.S. 5,591,811) in further view of Goswami et al. (U.S. Pat. 4,652,398).

Regarding claim 13: Das et al. teaches adding an epoxy resin (abstract), curing agent/catalyst (col. 8 lines 29-54), a phenol and an imidazole at a weight ratio of imidazole to phenol of 15:85 to 25:75 to make a curable composition (col. 9 line 40-col. 10 line 7).

Das et al. does not teach adding the compound of general formula (I). However, Blyakhman teaches adding the compound of formula (I) to an epoxy resin (col. 4 lines 54-58), a curing agent (col. 5 lines 41-48) and a phenol (col. 5 lines 41-48). At the time of the invention a person having ordinary skill in the art would have found it obvious to add in the imidazole of general formula (I) with the composition of Das et al. and would have been motivated to do so because 1-imidazolylmethyl-2-naphthols are effective catalysts for curing epoxy resins and provide epoxy resin systems with prolonged room temperature stability and fast curing as stated by Blyakhman (abstract).

Das et al. does not teach the specific phenols of the instant application. However, Goswami et al. teaches an epoxy resin, 2,2'-diallyl bisphenol A (o,o'-diallylbisphenol A) and an imidazole (Example 2). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the o,o'-diallylbisphenol A of Goswami et al. with the composition of Das et al. and would have been motivated to do so for such desirable properties as an excellent bond strength as discussed in Goswami et al. (col. 7 lines 14-23).



Regarding claim 14: Das et al. further teaches dissolving components before curing at a temperature of 65-75 °C (col. 9 lines 39-52).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-5, 8-11, and 13-15 have been considered but are moot in view of the new ground(s) of rejection. Therefore, this rejection has not been made final.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/552,908

Page 9

Art Unit: 1796

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/  
Supervisory Patent Examiner, Art Unit 1796

/M. M./  
Examiner, Art Unit 1796